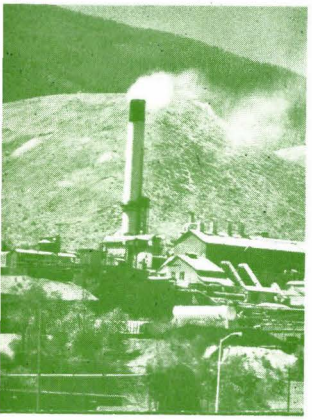

SB761
U7N6
79-17

LIBRARY

AUG 17 1979

ROCKY MOUNTAIN STATI

FOREST INSECT & DISEASE MANAGEMENT

USDA · FOREST SERVICE · NORTHERN REGION

State & Private Forestry · Missoula, MT 59801

Report No. 79-17

3450
June 1979

EVALUATION OF A PROPOSED DWARF MISTLETOE MANAGEMENT PROJECT ON THE SULA RANGER DISTRICT, BITTERROOT NATIONAL FOREST

By

Oscar J. Dooling, Plant Pathologist

SUMMARY

Residual Douglas-fir left after harvesting are dwarf mistletoe infected and pose a threat to regeneration in some units. Removal of residuals, coupled with planned or completed site preparation and thinnings, will effectively reduce dwarf mistletoe incidence and increase future volume yields. The benefit/cost ratio based on timber values alone is <0.01/1 at 10 percent and 0.14/1 at 6 percent. Elimination of dwarf mistletoe infection for several rotations outweighs the economic benefits for the first rotation. Value added to the economy cannot be used in benefit/cost calculations, but will be a substantial sum. Control is recommended. Average volume loss due to A. douglasii is estimated to be 20 cubic feet per acre per year on the Bitterroot National Forest.

INTRODUCTION

The Sula Ranger District has proposed the removal of dwarf mistletoe-infected Douglas-fir residuals from 260 acres to protect both advanced regeneration and that expected after site preparation. I evaluated the area on May 4, 1979.

TECHNICAL INFORMATION

Causal agent.--Douglas-fir dwarf mistletoe, Arceuthobium douglasii Engelm.

Host.--Douglas-fir, Pseudotsuga menziesii (Mirb.) Franco.

Type of damage.--Reduction of tree vigor, reduction of height and diameter growth, and some mortality.

AREA DESCRIPTION AND PROPOSED TREATMENT

Location of the proposed control area is shown in figure 1. Specific areas included are:

Stand	Acres
07-4-01	106
07-4-02 (part)	7
07-4-03	45
07-4-04	9
07-4-06	18
07-5-03	75
TOTAL	260

The stands were logged and the merchantable overstory removed about 10 years ago, leaving a patchy dwarf mistletoe-infected Douglas-fir understory. A few of the residuals are now large enough to be merchantable, or will be within a few years.

Proposed treatment is to (1) fell, slash, and pile all Douglas-fir greater than 3 feet in height on parts of the area; and (2) sanitation thinning on the remainder.

Forest Insect and Disease Management targets for the project are shown in figure 2.

DISCUSSION

Douglas-fir dwarf mistletoe is responsible for the most serious

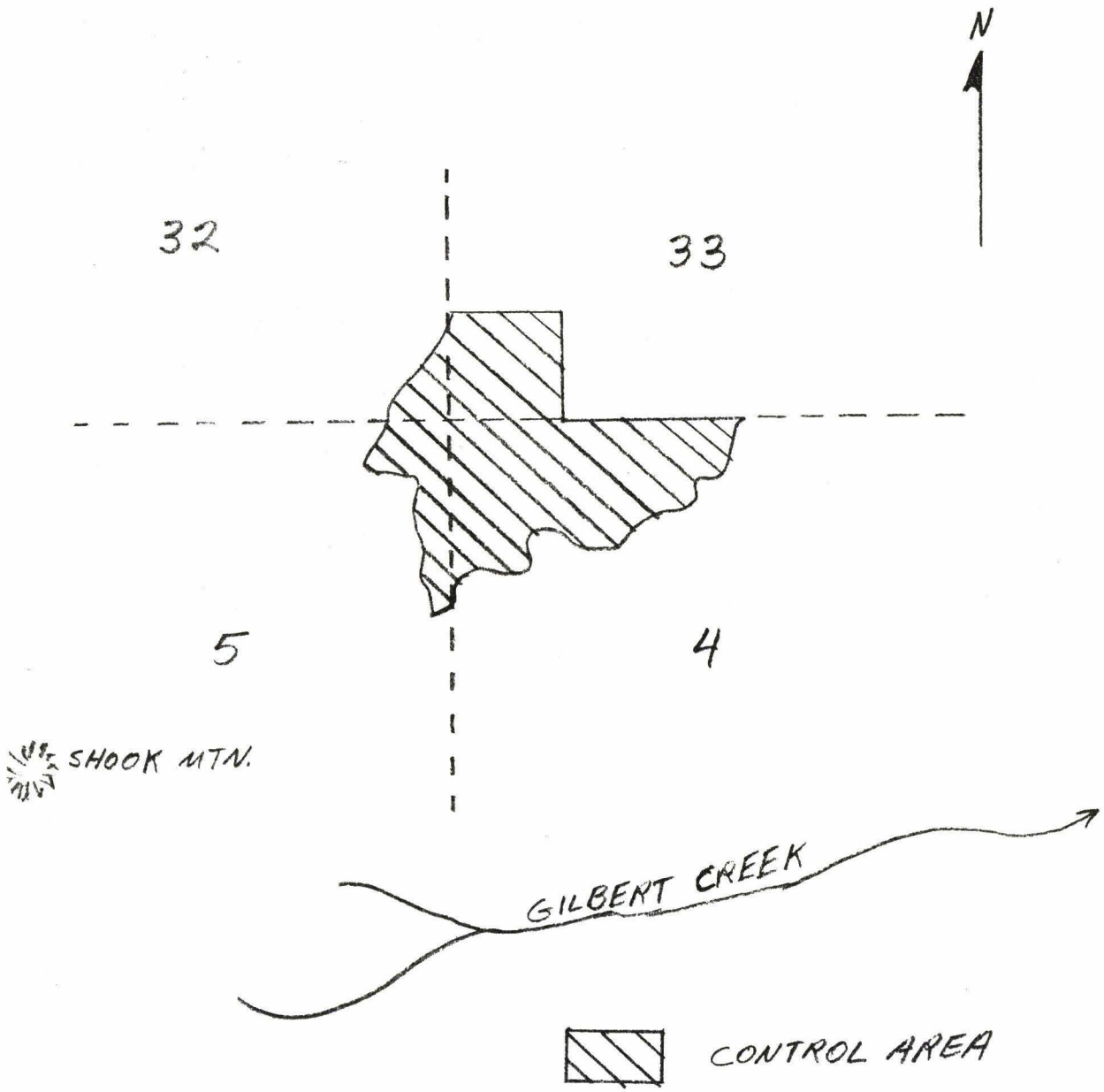

Figure 1.--Gilbert Creek dwarf mistletoe control area, Sula Ranger District, Bitterroot, National Forest.

FIDM TARGETS

FOR THE Gilbert Creek Dwarf Mistletoe SUPPRESSION PROJECT
(Name of Project)

	Acres (in M)	Vol. Protected (in MCF)	Vol. Removed (in MCF)
I&D Presuppression-Operational Survey	2.00	XXXXXXXXXXXXXX	XXXXXXXXXXXX
I&D Prevention/Suppression Using Biological Methods			
I&D Prevention/Suppression Using Chemical Methods			
I&D Prevention/Suppression Using Silviculture/Mechanical Methods. . .	0.26	2.145	0
Total	2.26	2.145	0

Figure 2.--FI&DM targets for Gilbert Creek dwarf mistletoe control area.

disease loss on the Bitterroot National Forest. Average volume loss in the Douglas-fir type on the Forest is estimated to be 20 cubic feet per acre per year. Infected trees and stands are also more vulnerable to attack by other disease organisms and insects.

Forest Insect and Disease Management funds will help finance the thinning and site preparation work that currently is being done in the stands included in the proposed project.

Benefit/Cost Analysis

Yield projections on the Bitterroot National Forest for one precommercial and one commercial thinning show the following volumes:

Cutting age	Volume recovery (MBF)	Value per MBF[1] ($)	Total recovery value ($)
20	0	-	
70	4	60	240
90	5	60	300
110	14	60	840
TOTALS	23		1,380

[1]Current net stumpage value on the Bitterroot National Forest.

By applying a 10 percent discount rate to these values, the present net worth (pnw) of dwarf mistletoe control is:

Time (n)	Dollar value	Discount factor[1]	pnw ($)
70	240	0.0013	0.31
90	300	0.0002	0.06
110	840	0.00003	0.03
TOTALS	1,380		0.40

[1]Present value of $1 for n years @ 10 percent.

By applying a 6 percent discount rate to these values, the pnw of dwarf mistletoe control is:

Time (n)	Dollar value	Discount factor[1]	pnw ($)
70	240	0.0169	4.06
90	300	0.0053	1.59
110	840	0.0016	1.34
TOTALS	1,380		6.99

[1]Present value of $1 for n years @ 6 percent.

Cost of treatment will be $49 per acre. By dividing the pnw of the benefits by the treatment cost, the benefit/cost ratio at 10 percent is less than 0.01/1 and at 6 percent is 0.14/1.

These calculations assume the value of stumpage will remain at present levels for 70, 90, and 110 years. This is probably false; stumpage prices will continue to rise, the benefits will be greater, and the benefit/cost ratios will increase.

There will also be value added to the economy. Each million board feet of timber cut creates 7 person-years of employment paying an average of $13,400 per year. This will generate 0.04, 0.05, and 0.14 years of employment in 70, 90, and 110 years respectively, and add $3,082 per acre to the economy.

Another benefit not directly related to pnw in dollars is the reduction in dwarf mistletoe infection for several rotations.

RECOMMENDATIONS

Decision for control.--Dwarf mistletoe control is biologically sound and should be done. Although not economically sound based on timber values, control will result in value added to the economy.

Control method.--Removal of dwarf mistletoe-infected residuals from cutover stands is the method selected.

Impact of control on other resources.--Because management of dwarf mistletoe will be by removal of residuals from areas already clearcut, there will be no additional adverse impact on other resources. An environmental analysis and report for this area are not required.